

Date: Monday, 10/23/2006 12:05:34 PM  
 User: Kim Johnston

## Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: CROSSTUBE EXTRUSION (206L)
Job Number	: 29113		
Estimate Number	: 10025		
P.O. Number	: N/A	Part Number	: D6002115
This Issue	: 10/23/2006 S.O. No. : N/A	Drawing Number	: D6002 REV A
Prsht Rev.	: NC	Project Number	: N/A
First Issue	: N/A Type : RMA	Drawing Revision	: A
Previous Run	: 25662	Material	: N/A
Written By	: <u>                    </u>	Due Date	: 1/30/2007
Checked & Approved By	: <u>                    </u>	Qty:	25 Um: Each
Comment	: Est Rev:B 00.12.15 Added: Issue P/O EC		

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
---------	-----------------------	---------------

1.0

PG

PURCHASING



Comment: PURCHASING

Issue P/O

2339

a) Extrude as per Dwg D6002

b) Material: 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9

or QQ-A-200/11 ) seamless aluminum tube

c) Minimum ultimate tensile strength = 77 ksi

d) Minimum tensile yield strength = 66 ksi

e) Material certification required

u

86-20-25

2.0

D6002115P

Crosstube material



Comment: Qty.: 1.0000 Each(s)/Unit Total: 25.0000 Each(s)

Crosstube material

3.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive &amp; Inspect For Transit Damage

Ensure material certification is attached

7/3/23 (30)

4.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

Ensure Material certification comply to Dwg D6002

En 07/03/26 (30)

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP / 2	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☐ No ☒ DQA: ☒ Date: 07/03/08  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 10/23/2006 12:05:34 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: CROSSTUBE EXTRUSION (206L)

Job Number: 29113

Part Number: D6002115

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

*Handwritten signature*

6.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: \_\_\_\_\_

*MS 07/03/27 30*

7.0

QC21

FINAL INSPECTION/W/O RELEASE



*(30)*

Comment: FINAL INSPECTION/W/O RELEASE

*PD07K3/28*

Job Completion



*U 07/03/28*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

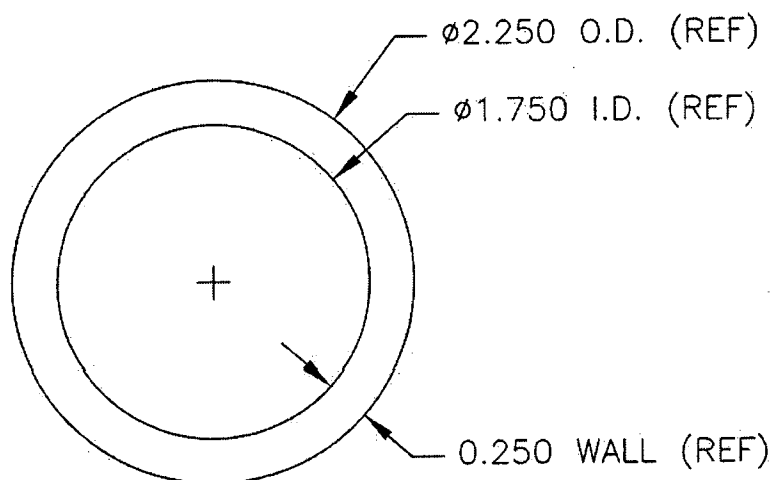
**NOTE:** Date & initial all entries



DESIGN CP	DRAWN BY CP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED A	APPROVED A	DRAWING NO. D6002	REV. A SHEET 1 OF 1
DATE 00.11.22		TITLE CROSSTUBE MATERIAL	SCALE 1:1
A	00.11.22	NEW ISSUE	

## SPECIFICATION CONTROL DRAWING

RELEASED  
00.11.24



### NOTES

- 1) D6002-XXX CROSSTUBE  
LENGTH

WHERE XXX IS LENGTH IN INCHES  
EG. 115" LONG TUBE: D6002-115

- 2) MATERIAL: 2.250 OD x 0.250 WALL 7075-T6/T6511 (WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11) SEAMLESS ALUMINUM TUBE.  
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi  
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
- 3) TOLERANCES ARE PER ASTM B210 AS FOLLOWS:  
O.D.:  $\pm 0.006$  MEAN ( $\pm 0.012$  INCLUDING OVALITY)  
WALL:  $\pm 0.008$  MEAN ( $\pm 0.025$  INCLUDING ECCENTRICITY)  
LENGTH: XXX  $+0.125/-0.000$   
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH
- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 29113

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**invoice**
**31742**

page: 2  
date: 2.16.2007  
customer: 40980

Tolerances per ASTM B210 / your drawing D6001  
Tubes protected with corrosion protective oil  
Tubes line marked  
Packing: seaworthy wooden cases

item	quantity	unit	price USD	unit	value	USD
002	30,000	PC	213,48	PC	6.404,40	

AWU article: 16468 / Tariff no. 76082081  
Customer article: D6002-115 2.250 X 0.250 X 115  
product: TUBES / seamless extruded / EN AW-7075 / round  
condition: T 6511 / AMS-QQ-A-200/11

outer diameter:	57,150 mm	Tol.	+0,300	-0,300
tol. for mean OD			+0,150	-0,150
inner diameter:	44,450 mm			
wall thickness:	6,350 mm	Tol.	+0,640	-0,640
fixed length	2921,000 mm	Tol.	+3,175	

test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455  
straightness 0,25 mm / 304,8 mm / RMS outer 25  
tol. on quantity +15 % -15 %  
2.250" OD 0.250" Wall, 115" lengths  
Part Number D6002-115 crosstube  
Surface Finish max. RMS 25  
Tolerances per ASTM B210 and drawing No. D6002  
Tubes protected with corrosion protective oil  
Tubes line marked  
Packing: seaworthy wooden cases

*7/3/23*

item	quantity	unit	price USD	unit	value	USD
003	21,000	PC	296,44	PC	6.225,24	

AWU article: 19795 / Tariff no. 76082081  
Customer article: D6003-102 2.250 X 0.435 X 102  
product: TUBES / seamless extruded / EN AW-7075 / round  
condition: T 6511 / AMS-QQ-A-200/11

outer diameter:	57,150 mm	Tol.	+0,300	-0,300
tol. for mean OD			+0,150	-0,150
inner diameter:	35,050 mm			
wall thickness:	11,050 mm	Tol.	+1,120	-1,120
fixed length	2591,000 mm	Tol.	+3,175	

inspection cert. acc. to EN10204/3.1 / RM 531 / Rp0,2: 455  
straightness 0,25 mm / 304,8 mm / RMS outer 25  
tol. on quantity +15 % -15 %  
2.250" OD 0.435" Wall, 102" lengths  
Part Number D6003-102 crosstube

carried forward:

18.481.72

**ALUnna****Abnahmeprüfzeugnis 3.1 - EN 10204:2004****Inspection Certificate 3.1 - EN 10204:2004 / Certificat de Reception 3.1- EN 10204:2004****Kunde:**

Client:

Dart Aerospace Ltd.

1270 Aberdeen Street  
K6A1K7 Hawkesbury, ON Canada**Zeugnisnummer:**

154/07

Cert No.: / No. du certificat:

**Bestellnummer:**

PO 00002339

Order No. / No. de commande

**Auftrag:**

21531/2

Our Reference/Notre Reference:

**Produkt:**

Product / Produit:

Rohre nahtlos gepresst

Tubes seamless extruded

**Spezifikation:**

Specification:

AMS - QQ - A - 200/11E; Spezifikation Dart Aerospace D6001

**Werkstoff:**

Alloy/Alliage:

7075

**Zustand:**

T 6511

Temper/État

**Abmessung**

Size / Dimension

2,250 INCH x 1,750 INCH x 0,250 INCH x 115,000 INCH

D6002-115 2.250 X 0.250 X 115

**Kennzeichnung**

Marking/Marquage:

ALUnna - Cert no. 154/07 - 7075 - T 6511 - Cast No. 80006 - AMS - QQA 200/11 - 2.250" OD X 0.250" Wall - Heat  
No. 912/01 - Lot 21531/2-1 PO. 00002339**Lieferung**

Delivered Material / Matériel délivré:

pcs.

lbs

Country of Manufacture: Germany

30

564

**1. Chemische Analyse****Chemical Analysis / analyse chimique**

Charge/ Cast No.	min. max.	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni
80006		0,40	0,50	1,2 2,0	0,30	2,1 2,9	0,18 0,28	5,1 6,1	0,20					
		0,096	0,178	1,37	0,031	2,48	0,183	5,82	0,037	0,004	0,014	0,001	0,001	0,0001

Hydrogen content: 0,10

ccm/100 g Al

Elements without indication &lt; 0,01 %

**2. Mechanische Eigenschaften****Mechanical Properties / Valeurs Mécaniques**

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Heat No.
min. max.	77,0	66,0				
1	83,520	76,270	10,0		172	912/01 - 30 pcs.

RMS: outside 25 - max. 10,5 µ"

**Ergebnis der  
Prüfungen:**

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

**Test results:**

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order

**Results:**

Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande



Customer PO	PO. 00002339
ALUnna ref. no.	21531/2
Date:	02.15.07

Dart Aerospace PC. 00002339
D 5002 - 115 Made in Germany
Dest. Hawkesbury, Canada

**free from live plant pests**

[illegible]